REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-7 are pending in this application. Claim 1 has been presently amended.

In the Office Action, Claims 1 and 5 were rejected under 35 U.S.C. § 102(e) as being anticipated by Chang et al (U.S. Patent No. 6,805,952). Claims 2-4, 6, and 7 were rejected under 35 U.S.C. § 103(a) by Chang et al in view of Harada et al (U.S. Patent No. 6,783,863).

Claim 1 has been amended to more particularly define the invention taking into consideration the comments in the outstanding Official Action. Further, changes at page 10 and 11 in the specification have been made to more definitely define the invention. The amendments are fully supported by the original disclosure of this application and therefore do not constitute the introduction of any new matter into this case.

Reconsideration of the application is respectfully requested based on the following reasons:

Concerning the rejection of claims 1 and 5 under 35 U.S.C. § 102(e) over Chang et al:b

Applicants respectfully traverse the rejection of claims 1 and 5 under 35 U.S.C. § 102(e) as being anticipated by Chang et al. The Examiner's attention is directed to MPEP §2131 which states that to anticipate a claim, the reference must teach every element of the claim. The present invention, as defined in amended claim 1, is directed to a plasma processing apparatus which includes a processing vessel in which a plasma of a CF based gas therein is excited to perform microprocessing on a surface of an object to be processed. In-chamber components are disposed inside the processing vessel. At least one of surfaces of the processing vessel's inner wall and the in-chamber components is coated with an Y_2O_3

sprayed coating over a predetermined area. As defined in Claim 1, an accumulation of CF based polymer deposits on the surfaces of the inner wall and the in-chamber components is prevented by a reaction between the Y_2O_3 sprayed coating and the CF based polymer deposits.

More particularly, the CF based polymer of a reaction byproduct resulting from plasma processing of the CF based gas, which results in yield deterioration, is effectively reacted with the Y_2O_3 sprayed coating to reduce effectively the accumulation of the CF based polymer deposition.

Chang et al is totally silent on the fact that the accumulation of CF based polymer deposits on the surfaces of the processing vessel's inner wall and the in-chamber components is prevented by a reaction between a Y_2O_3 sprayed coating and a CF based polymer deposits. Instead, Chang et al merely disclose that polymer deposits are tightly adhered to the plasma exposed surfaces of a component for use in plasma processing chambers. Specifically, Chang et al disclose that the component has one or more surfaces exposed to the plasma during processing, and includes an a plasma sprayed coating on the plasma exposed surface of the component. Further, the plasma sprayed coating (formed by plasma spraying a coating material such as a ceramic or high temperature polymer onto the surface of the component) has desired surface roughness characteristics that promotes the adhesion of polymer deposits, according to Chang et al.

Thus, Chang et al fail to disclose or even suggest that an accumulation of CF based polymer deposits is prevented by a reaction between the Y_2O_3 sprayed coating and the CF based polymer deposits. Accordingly, Applicants submit that amended claim 1 is not anticipated by Chang et al.

It is also believed that claim 5 is allowable for at least the same reasons indicated with respect to the amended claim 1 by virtue of its dependence upon claim 1. Therefore, it is most respectfully requested that this rejection be withdrawn.

Concerning the rejection of claims 2-4, 6 and 7 under 35 U.S.C. § 103(a) by Chang et al in view of Harada et al

Applicants respectfully traverse the rejection of claims 2-4, 6 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Chang et al in view of Harada et al.

In particular, the present invention defined in claim 2, is directed to the plasma processing apparatus wherein at least one of surfaces of the processing vessel's inner wall and the in-chamber components is coated with an Y_2O_3 sprayed coating over a predetermined area. An accumulation of CF based polymer deposits on the surfaces of the inner wall and the in-chamber components is prevented by a reaction between the Y_2O_3 sprayed coating and the CF based polymer deposits. Further, the predetermined area is greater than or equal to a surface area [$S(m^2)$] satisfying the equation $S = 6.554A / (t \times 5 \times 10^6)$, wherein A is a gas flow rate (sccm) in the processing vessel and t is a thickness (m) of the Y_2O_3 sprayed coating.

As discussed above, Chang et al only discloses the plasma sprayed coating with a desired surface roughness for the promoted adhesion of polymer deposits without regard to the CF based polymer deposits reaction with Y_2O_3 sprayed coating. That is, Chang et al is totally silent on the fact that an accumulation of CF based polymer deposits is prevented by a reaction between the Y_2O_3 sprayed coating and the CF based polymer deposits. Far from disclosing the reaction, Chang et al did not even recognize that there exists a reaction between the Y_2O_3 sprayed coating and the CF based polymer deposits.

Accordingly, Applicants respectfully submit that it would ***not*** have been obvious to one of ordinary skill in the art at the time of the invention to calculate the predetermined area

for a sufficient reaction to prevent accumulation of CF based polymer deposits since the reaction between the Y_2O_3 sprayed coating and the CF based polymer deposits was not even recognized in Chang et al. Therefore, either the predetermined area coated with an Y_2O_3 sprayed coating or the thickness of the Y_2O_3 sprayed coating in claim 2 is not a cause effective variable; and therefore the optimum or workable ranges of the predetermined area can not be discovered by routine experimentation.

Further, the disclosure in Harada et al is related to an internal member for a plasma treating vessel having excellent resistances to chemical corrosion and plasma erosion. As stated in the Office Action, Harada et al teach that, for a specific size of substrate and for a specified coating thickness, good test results against plasma erosion were achieved by controlling relevant process parameters like gas flow rate, pressure and high frequency power output. However, the example disclosed in Harada et al is no more than an example which tests a plasma erosion damage of an aluminum test piece by adjusting process related variables.

Furthermore, in the same manner with Chang et al, Harada et al is completely silent on a reaction between the Y_2O_3 sprayed coating and CF based polymer deposits to reduce an accumulation of CF based polymer deposits. Accordingly, Applicants respectfully submit that additional teachings of Harada et al do not overcome the deficiencies of Chang et al. Therefore, it is respectfully submitted that claim 2 is allowable over the cited references.

It is therefore respectfully submitted that claims 3-4 and 6-7 are allowable over the cited references, and the withdrawal of this rejection is respectfully requested.

Conclusion:

Consequently, in light of the present amendment and the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application as amended is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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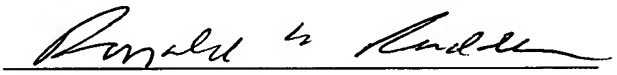

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